

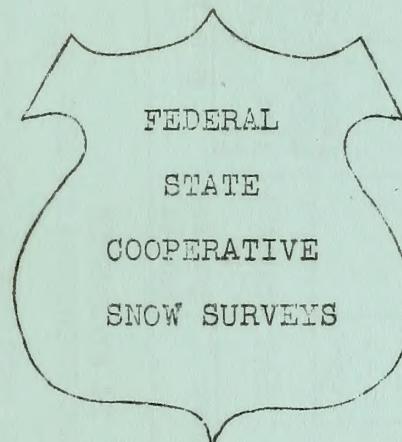
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SNOW SURVEYS AND IRRIGATION WATER FORECASTS
for the
COLORADO RIVER DRAINAGE BASIN

March 1, 1941



Issued by the
United States Department of Agriculture
Soil Conservation Service
Division of Irrigation
In Cooperation with
The Colorado Agricultural Experiment Station
Colorado State College
Fort Collins, Colorado

March 10, 1941

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

COLORADO RIVER BASIN

March 1, 1941

The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by the Division of Irrigation, Soil Conservation Service, U. S. Department of Agriculture, in cooperation with State departments, other federal bureaus and local organizations. The snow measurements are made principally by field personnel of the following Federal Government organizations: Forest Service, National Park Service, Geological Survey, Bureau of Reclamation, Indian Service; and the Utah Agricultural Experiment Station. This work is otherwise conducted cooperatively with the State Engineers of Wyoming, Utah, and Colorado, U. S. Geological Survey, Utah and Colorado Agricultural Experiment Stations, and various municipalities, irrigation associations, power companies, and others. Precipitation records are supplied by the U. S. Weather Bureau.

SUMMARY OF MARCH 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS
BY WATERSHEDS

WATERSHEDS	Snow Depth				Water Content				Number Courses in Average	Snow Density				1941 Water Content in percent of		
	Six Year Avg.*	1940	1941	Six Year Avg.*	1940	1941	Average	Six Year Avg.*		1940	1941	Six Year Avg.*	Percent	Percent	Percent	
	In.	In.	In.	In.	In.	In.	In.	In.		In.	In.	In.	In.	In.	In.	
COLORADO RIVER																
Colorado River**	40.5	32.6	35.1	10.7	9.3	8.3	19	26	24	28	24	78	76	89	82	
Yampa River	50.0	42.6	44.0	14.5	13.4	11.0	14	29	31	31	31	25	27	86	106	
White River	46.8	35.8	46.4	14.6	11.8	12.5	2	31	32	32	32	27	29	104	120	
Gunnison River	47.2	41.9	47.6	13.1	11.3	13.6	12	28	27	27	27	22	22	101	93	
Dolores River	38.9	37.5	43.7	9.4	10.2	9.5	3	24	27	27	27	41	41	122	153	
San Juan River	45.2	37.0	39.5	13.3	10.6	16.2	6	29	29	29	29	35	35	113	159	
Gila River	10.2	6.2	10.1	3.1	2.2	3.5	8	30	36	36	36	35	35	113	159	

*Some for shorter periods.

**Above Grand Junction, Colo.

P R E C I P I T A T I O N D A T A

WATERSHED	STATE	Precipitation		Departure from Normal		Precipitation February	Departure from Normal
		October 1 to February 28	Inches	Inches	Inches		
Colorado	Colorado	8.12	40.83	-0.02	1.61	-0.03	
Green	Wyoming	3.67	0.02	0.50	0.50	-0.29	
San Juan	New Mexico	7.45	+3.29	1.38	2.31	+0.45	
Gila	Arizona	10.99	+4.49	2.31	2.31	+0.75	
Gila	New Mexico	6.73	+2.33	1.25	1.25	+0.35	

WATER SUPPLY OUTLOOK

Precipitation was below normal on the watershed of the Colorado River in Colorado and Wyoming during February but was considerably above normal on the watershed of the San Juan and Gila in Colorado, New Mexico and Arizona.

COLORADO RIVER AND TRIBUTARIES IN COLORADO. The average water content of the snow on 19 courses on the watershed of the Colorado River above Grand Junction on March 1 was 8.3 inches. A year ago it was 9.3 inches and the six-year average is 10.7 inches. Four courses on the Yampa River had 11.0 inches of water in the snow on March 1 this year, 13.4 inches on this date last year and 14.5 inches as the six-year average. For the two courses on the White River the corresponding values are 12.5 inches, 11.8 inches and 14.6 inches. On the Gunnison River watershed, the water content of the snow on 12 courses was 13.6 on March 1, a year ago it was 11.3 inches and the six-year average is 13.1 inches. On the watershed of the Dolores River the water content of the snow on 3 courses was 9.5 inches on March 1, and 10.2 inches a year ago. The six-year average for these courses is 9.4 inches.

SAN JUAN RIVER. Snow cover on the watershed of the San Juan as shown by 6 courses is the heaviest in years. On March 1, 1941 it was 16.2 inches whereas last year it was 10.6 inches. The six-year average is 13.3 inches.

GILA RIVER. On March 1, 1941, the water content of the snow on the 8 Gila River courses was 3.5 inches and a year ago it was only 2.2 inches. The five-year average is 3.1 inches.

Soil moisture conditions are very good in the Salt and Gila River valleys in Arizona and fair to good in the valley of the Colorado River and its tributaries in Colorado. Storage in Taylor Park Reservoir in Colorado is 30 percent less than it was last year, but storage in the reservoirs in Arizona is the greatest in years. In the Salt River Valley Water Users' Association reservoirs it was 1,067,000 acre-feet on March 1, 1941; a year ago it was only 179,000 acre-feet. San Carlos Reservoir at present has 407,000 acre-feet in storage whereas last year at this time it contained only 47,000 acre-feet. Stream flows are above normal in Arizona as a result of heavy precipitation and melting of snow. Present indications are that run-off will be below normal for the Colorado above Grand Junction, the Yampa and the Dolores, and slightly more than last year for the White and the Gunnison. Late snows, may, however, improve conditions in these several areas. The run-off is expected to be considerably above normal for the San Juan and the Gila Rivers. For these two streams an ample water supply for next summer seems assured.

COLORADO RIVER WATERSHED
Summary of Federal and State Cooperative Snow Surveys
Issued March 10, 1941, at Fort Collins, Colo.

Main Drainage and No. Snow Course	Local Junction (Above Grand Junction)	State	Locality	Description	Mar. 1 Snow Course Measurements						
					Elev. National Forest		Av. Water Content		In. In.	In. In.	
					Avg.	1940	Snow Depth	Ave.	1940	1941	
7 Park View*	Willow Cr.	Colo.	7mi. SE. Rand	24-5N-78W	9200	Routt	30.8	21.9	4.1	5.5	
12 Phantom Valley	Colorado R.	"	11mi. N. Grand L.	7-5N-75W	9300	Ry. Mtn. N.P.	32.6	28.6	7.4	6.2	
16 Berthoud Pass	Fraser R.	"	4mi. S. West Port.	35-2S-75W	9700	Arapaho	50.7	44.0	14.0	11.7	
19 Tennessee Pass*	Eagle River	"	Tennessee Pass	21-8S-80W	10200	Cochetopa	32.4	23.5	26.2	5.6	
33 Ind. Pass Tunnel	Lincoln Gulch	"	W. Port. Tunnel	30-11S-82W	10200	Holy Cross	47.2	35.2	39.9	9.2	
34 N. Lost Trail Cr.	Crystal R.	"	3mi. E. Marble	20-11S-87W	"	"	46.4	28.6	10.7	8.6	
37 M. Fork Camp Gr.	Williams Cr.	"	13mi. N. Dillon	16-3S-77W	9000	Arapaho	32.7	24.9	25.7	5.8	
44 Fiddler Gulch	Eagle River	"	2mi. E. Mitchell	1-8S-80W	11000	Holy Cross	46.0	32.4	39.9	9.4	
45 Nast	Frying Pan R.	"	23mi. SE. Basalt	1-9S-83W	8700	"	24.9	18.2	16.5	4.5	
54 Maroon Lake	Maroon Creek	"	8mi. SW. Aspen	7-11S-85W	9300	"	39.3	29.0	36.1	8.7	
56 Mesa Lakes	Mesa Creek	"	15mi. E. Palisade	35-11S-96W	10000	Grand Mesa	51.1	49.4	44.2	18.2	
59 Iulu	Lulu Creek	"	11mi. N. Grand L.	25-6N-76W	10200	Ry. Mtn. N.P.	46.9	45.8	38.0	9.4	
62 Willow Creek P.	Willow Cr.	"	Willow Cr. Pass	1-1N-78W	9500	Arapaho	35.7	31.6	28.6	7.1	
64 N. Inlet Grand L.	N. Inlet Cr.	"	4mi. NE. Grand L.	26-1N-75W	9000	Ry. Mtn. N.P.	29.1	23.0	7.2	4.4	
65 Lake Irene	Beaver Creek	"	1mi. SW. Milner P.	8-5N-75W	10600	"	54.8	50.4	16.3	11.4	
66 Thunderbolt Peak	Buchanan Cr.	"	5mi. E. Monarch L.	22-2N-74W	9500	Arapaho	47.6	38.8	37.0	8.7	
69 Arrow	S. Ranch Cr.	"	7mi. SW. Fraser	34-1S-75W	9900	"	31.6	27.8	27.2	6.2	
70 Lapland	St. Louis Cr.	"	16-2S-76W	11400	"	26.7	32.8	6.7	6.9		
79 Fremont Pass	Blue River	"	2-8S-79W	27-2N-83W	9100	Routt	48.6	36.6	39.0	7.8	
91 Lynx Pass No. 2	Rock Cr.	"	7mi. NE. Toponas	Average for Drainage	41.7	29.3	37.7	11.4	9.8	9.1	
					40.5	32.6	35.1	10.7	9.3	8.3	
YAMPA RIVER											
6 Dry Lake	Soda Creek	Colo.	4mi. NE. Steam. Spgs.	26-7N-84W	8200	Routt	52.0	47.2	46.1	14.8	
8 Columbine Lodge*	Harrison Cr.	"	21-5N-82W	9300	"	"	62.9	51.5	52.2	12.3	
9 Elk River	Independence Cr.	"	6-10N-85W	8700	"	"	43.5	42.3	40.2	10.6	
91 Lynx Pass No. 2*	Morrison Cr.	"	27-2N-83W	9100	"	Average for Drainage	41.7	29.3	37.7	9.1	
					50.0		50.0	42.6	44.0	11.0	
WHITE RIVER											
35 Burro Mountain	N. Elk Creek	Colo.	15-2S-91W	9000	White River	52.3	39.4	51.9	12.7	15.2	
36 Rio Blanco	White River	"	28-1M-88W	8500	"	"	41.2	32.2	40.9	9.8	
					46.8	Average for Drainage	46.8	35.8	46.4	12.5	

*On adjacent drainage

*Readings on original course

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No.	Main Drainage and Snow Course	Local Drainage	Location	Description	Elev. National Forest						Mar. 1 Snow Course Measurements					
					Av. Snow Depth			Av. Water Content			Av. Snow Depth			Av. Water Content		
					In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
18	GUNNISON RIVER															
Crested Butte	Slate River	Colo.	3mi.N.Crested B.	22-13S-86W	9000	Gunnison	47.0	37.4	41.0	12.3	9.3	10.5	9.5	10.5	10.5	10.5
Marshall Creek	Marshall Cr.	"	Marshall Pass	24-48N-6E	10800	Cochetopa	42.2	36.0	38.1	10.5	5.5	5.5	9.5	10.3	10.3	10.3
42	Poncha Creek*	"	"	19-48N-7E	10500	"	30.9	27.0	35.0	8.3	4.3	4.3	4.3	4.3	4.3	4.3
43	Park Cone	Taylor River	Taylor Park Res.	19-14S-82W	9700	Gunnison	34.0	22.7	26.8	7.7	4.7	4.7	6.1	6.1	6.1	6.1
Alexander Lake	Kiser Creek	"	10mi.N.Cedaridge	2-12S-95W	10000	Grand Mesa	64.4	56.5	71.5	18.2	15.6	15.6	21.3	21.3	21.3	21.3
53	Snowshoe Mesa	Snowshoe Cr.	16mi.NE.Paconia	14-13S-80W	7500	Gunnison	33.9	29.9	20.5	9.1	9.1	9.1	6.2	6.2	6.2	6.2
55	Ironton Park	"	5mi.S.Ouray	29-43N-7W	9800	Uncompahgre	41.1	45.3	43.8	12.8	15.6	15.6	14.2	14.2	14.2	14.2
58	Trickle Divide	Red Mtn.Cr.	13mi.N.Cedaridge	23-11S-94W	10000	Grand Mesa	67.4	60.6	74.1	19.5	17.1	17.1	21.9	21.9	21.9	21.9
85	Trickle	Surface Cr.	11mi. "	34-11S-94W	9700	"	60.0	53.7	66.2	17.8	15.5	15.5	20.0	20.0	20.0	20.0
86	Park Reservoir	"	"	34-11S-94W	9500	"	63.1	57.6	68.6	18.8	16.7	16.7	20.8	20.8	20.8	20.8
87	Porphyry Creek	Henson Cr.	"	19-49N-6E	10800	Cochetopa	45.4	43.0	47.7	12.4	11.8	13.1	13.1	13.1	13.1	13.1
89	Sunshine Mt.No.2	"	Monarch Pass	35-14N-6W	10200	Gunnison	37.7	33.5	37.5	10.2	9.9	9.9	8.8	8.8	8.8	8.8
94		Lake City	10mi.W.Lake City	"	Average for Drainage	47.0	41.9	47.6	13.1	11.3	11.3	13.6	13.6	13.6	13.6	13.6
DOLORES RIVER																
23	Dolores R.	Colo.	11-39N-11W	8700	Montezuma	32.3	33.5	36.1	8.1	8.7	8.7	9.5	9.5	9.5	9.5	9.5
Rico			6-42N-8W	8600	"	33.2	31.5	35.3	7.7	8.7	8.7	6.8	6.8	6.8	6.8	6.8
24	Telluride	"	24-41N-10W	10300	"	51.1	47.4	59.6	12.5	13.2	13.2	12.2	12.2	12.2	12.2	12.2
	Dolores R.	"	23-41N-13W	8900	"	40.2	--	40.2	11.5	--	--	11.5	11.5	11.5	11.5	11.5
	Lizard Head	"			Average for Drainage	38.9	37.5	43.7	9.4	10.2	10.2	9.5	9.5	9.5	9.5	9.5
	Lone Cone	"														
SAN JUAN RIVER																
26	Wolf Creek Pass*	Colo.	4-37N-2E		Rio Grande	74.2	53.0	75.0	22.8	15.6	15.6	25.1	25.1	25.1	25.1	25.1
Upper San Juan	"	4mi.W.Wolf Cr.P.	10-37N-1E	10000	San Juan	81.5	67.2	73.1	24.2	20.0	20.0	29.9	29.9	29.9	29.9	29.9
29	Silverton Sub.S.	2mi.NE.Silverton	10-41N-7W	9400	"	25.1	24.5	30.1	5.9	5.7	5.7	7.6	7.6	7.6	7.6	7.6
30	Cascade	Animas R.	12-39N-9W	8850	"	35.8	33.5	40.7	10.0	9.7	9.7	11.3	11.3	11.3	11.3	11.3
31	Granite Peaks	Cascade Cr.	24-37N-6W	7950	San Juan	25.5	--	25.5	5.5	--	--	5.5	5.5	5.5	5.5	5.5
93	Roof Butte	Los Pinos R.	11mi.NE.Columbus	36-4N109.1W	8500	Navajo Res.	32.0	24.5	38.9	9.8	10.8	10.8	14.2	14.2	14.2	14.2
2	Washington Pass	Chin Lee Cr.	26-1N108.8W	8600	"	31.4	24.5	38.9	9.8	7.2	7.2	9.0	9.0	9.0	9.0	9.0
13	Chama Divide*	Tunitsa Wash	36-9N106.7W	7750	Off Forest	23.1	19.4	26.8	7.2	5.4	5.4	15.6	15.6	15.6	15.6	15.6
17	Chama R.	Amargo R.	36-9N106.7W	8500	"	47.5	--	47.5	--	--	--	16.2	16.2	16.2	16.2	16.2
18	Chamaita*	Navajo R.	6mi.NW.Chama	"	Average for Drainage	45.2	37.0	39.5	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3

*On adjacent drainage

*Readings on original course.

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					Av. Snow Depth		Av. Water Content		Av. Water Content	
					1940	1941	Avg.	1940	1941	Avg.
GILA RIVER					In.	In.	In.	In.	In.	In.
11 Frisco Divide	Blue River	N. Mex.	6mi.S.Luna	31-6S-20W	8000	Apache	8.2	4.4	10.6	2.4
14 State Line	"	"	Alpine; Luna	6-6S-21W	8000	"	12.5	8.6	17.6	3.9
3 Nutrioso	San Fran.R.	Ariz.	5mi.SE.Nutrioso	23-6N-30E	8500	"	9.7	8.4	8.3	2.8
4 Beaver Head	Castle Cr.	"	11mi.SW.Alpine	13-4N-30E	8000	"	13.7	9.9	17.8	4.2
5 Coronado Trail	Coleman Cr.	"	4mi.S.	26-5N-30E	8000	"	15.0	14.3	19.0	4.9
6 McNary	Salt River	"	3mi.NW.McNary	14-8N-23E	7200	W.M.Ind.Res.	12.9	4.1	7.3	3.8
7 Forest Dale	"	"	5mi.SW.Showlow	2-9N-21E	6000	"	"	5.1	0.0	1.3
8 Trout Creek	"	"	3mi.SW.McNary	5-7N-24E	6400	"	"	4.4	0.0	0.0
9 Milk Ranch	"	"	4mi.W.	28-8N-23E	7000	"	"	0.0	0.0	0.0
Average for drainage										
					10.2	6.2	10.1	3.1	2.2	3.5

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